

ABSTRACT

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Improvements Relating to Electrical Power Measurement

5 An electric power meter (1,201) is described which implements a method of measuring the value of an electrical power parameter, such as Universal Apparent Power or Universal Power Factor, of an electrical power signal. The method is implemented in the time domain and comprises: calculating a first instantaneous power component ($p_p(t)$) as the product of an instantaneous voltage signal (v_{va}, v_{vb}, v_{vc}) of the electrical power signal and an instantaneous current signal (v_{ia}, v_{ib}, v_{ic}) of the electrical power signal, carrying out a relative phase shift between the instantaneous voltage signal (v_{va}, v_{vb}, v_{vc}) and the instantaneous current signal (v_{ia}, v_{ib}, v_{ic}); and calculating a second instantaneous power component ($p_q(t)$) as the product of the relatively phase-shifted instantaneous voltage and instantaneous current signals (v_{ia}, v_{ib}, v_{ic}). The first and second instantaneous power components ($p_p(t), p_q(t)$) are then RMS averaged to determine their respective magnitudes. Both of the calculated magnitudes are then used to determine the value of the electrical power parameter. The method can alternatively be implemented in the frequency domain to produce equivalent measurement values.

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(Figure 2)